

Research Report

Interactive dental health education on the knowledge level of little doctors students of Muhammadiyah 4 Elementary School

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ABSTRACT

Background: Dental and oral health education is conducted with the aim of changing the habits of a person, group of people, or society so they can gain knowledge, attitudes, and habits to behave in a healthy way in the field of dental and oral health. Elementary school age is the right time for teachers to introduce and instill healthy living habits. A dental and oral health education for Little Doctor students is assumed to help improve the dental and oral health of other students, teachers, and other staff of the school, as well as the people around the student outside of school. **Purpose:** To describe the effect of interactive dental health education on knowledge improvement. **Methods:** This study's sample size was 31 Little Doctor students in the third through sixth grades. The activity in general adopted two-way communication; interactive speaking was performed to stimulate the students attentiveness to the topics, allowing students to engage with the speakers. To assess the students' knowledge level of oral and dental health, a pre-test questionnaire was filled out prior to starting, and the same questionnaire was filled out as a post-test after completing all the agenda. **Results:** There were significant differences between pre-test and post-test results (P -value < 0.05), with the mean rank of the post-test group (45.56%) being significantly higher than the pre-test group (17.44%). **Conclusion:** The interactive education method in elementary school was found to be efficacious and more preferable as it matches the level of growth and development in school-age children.

Keywords: Dental Health; Education; Elementary School; Children; Oral Health; Medicine

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INTRODUCTION

Dental and oral health are fundamental parts of general health and well-being and are also parts of body health that cannot be separated from one another, as dental and oral health problems will eventually affect a person's body directly or indirectly.¹ Dental and oral health education is carried out with the aim of changing the habits of a person, group of people, or society so they can gain knowledge, attitudes, and habits to behave in a healthy way in the field of dental and oral health.²

Dental health education is one of the efforts to prevent dental disease and improve dental and oral health in elementary school-aged children. The purpose of dental and oral health education is to increase the empowerment of individuals and communities in order to improve the level of dental health in the future. Dental health education is not only the responsibility of the government but is also

the responsibility of all parties to the authorization. Good education can increase one's knowledge and abilities through learning practice techniques or instructions that aim to change human attitudes, both individually, in groups, and in the community, so that they can increase awareness of the value of oral and dental health.³

The society's awareness of dental health, especially in the school-age group, is still relatively low in Indonesia. The data acquired from the national database 2018 on dental treatment visitation frequency categorized into 3–4 years old, 5–9 years old, and 10–14 years old age groups are 96.3%, 96.5%, and 96.1%, respectively, which are also three of the highest among all age groups. Dental and oral health problems are some of the alarming concerns of youth due to the vulnerability of school-age groups to the risk factors of the diseases. According to data, 54% of children in the 5–9 year old age group and 41.4% in the 10–14 year old age group have tooth problems, either due to caries or dental pain.^{4,5}

The delivery of dental counseling must be adjusted to the age of the child so that what is conveyed can be accepted and understood by students. Children aged 7–11 years are at a stage where they can reason logically as long as the reasoning can be applied to specific or concrete examples, but children at this age still cannot think abstractly. So in the learning process, learning aids or media are very important to be used, which aim to make abstract things more concrete, encourage learning motivation, and also clarify and simplify complex concepts to be simpler and easier to understand.⁶ One of the learning media that is often used is audio-visual and demonstration-based learning media. The use of audio-visual media can optimize the learning outcomes of students because this media can be seen and also heard. The experiences received by students through the senses of sight and hearing will help them construct the information they are receiving.⁷

Elementary school age is the right time for teachers to introduce and instill healthy living habits. School-age children are children aged 6–21 years, which, in accordance with the process of growth and development, are divided into two sub-groups, namely pre-adolescents (6–9 years) and adolescents (10–19 years). This habit can be trained by optimizing the School Health Unit (SHU) or *Unit Kesehatan Sekolah* (UKS) program. UKS is a government program that is mandatory in schools for health services, health education, or healthy living habits so that they are implemented in the surrounding environment. UKS has a program that functions as a means of health education in order to realize healthy living behaviors. The program in discussion is Little Doctor. Little Doctors are students who meet the criteria, are selected by the teacher, and have received training to participate in carrying out some efforts to maintain and improve the health of themselves, their friends, their family, and their environment.⁸ Another task of the Little Doctor is the maintenance of personal hygiene, which means the act of maintaining one’s personal hygiene and health for his physical and psychological well-being. A person is said to have good personal hygiene if they can maintain the cleanliness of their body, which includes the cleanliness of their skin, teeth, mouth, hair, eyes, nose, and ears, feet and nails, genitalia, and the cleanliness and

neatness of their clothes.⁹ The Little Doctor Program is an educational approach in order to realize healthy behaviors, including individual hygiene behaviors, where students are involved as implementers. A dental and oral health education for Little Doctor students of Muhammadiyah 4 Elementary school is assumed to help improve the dental and oral health of other students, teachers, and other staff of the school, as well as the people around the student outside of school. Furthermore, the aim of this study is to describe the effect of interactive dental health education on knowledge improvement.

MATERIALS AND METHODS

This project took place in a theater hall at Muhammadiyah 4 Elementary School in Surabaya with the permission of the elementary school principal. The implementers consist of 11 fourth-year undergraduate students of the Faculty of Dentistry at Mara University of Technology, Malaysia, and six postgraduate students of the Department of Prosthodontics at the Faculty of Dental medicine, Universitas Airlangga, Surabaya, East Java, Indonesia.

The format of the project is a public service activity, and the design used in this study is a pretest-posttest design. The project comprised two main parts. The first part is a brief presentation about oral and dental health that contains kid-friendly visual information such as tooth cavities, healthy and high-fiber foods, and proper methods of tooth brushing presented by postgraduate students of Universitas Airlangga. The second part is an interactive oral and dental health education carried out by undergraduate students of Mara University of Technology, Malaysia. The students were randomly divided into four groups, and the undergraduate students were separated into four teams as well. There were four booths with different dental health topics, each manned by one team and one postgraduate student of Universitas Airlangga booth was given a predetermined time (up to 10 minutes) to present the topic and was monitored by a timekeeper. The first booth was about diet counseling using two tooth-shaped plushies; one plushy with a happy face represents a healthy tooth, and

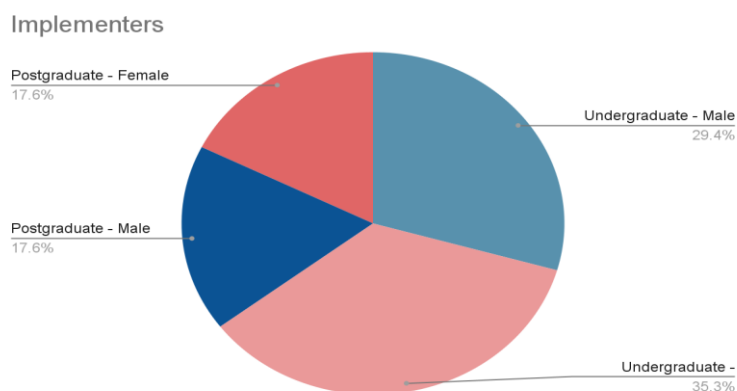


Figure 1. Implementers personnel data.

the other one with a sad face represents a rotten tooth. The students were given small plushies such as apples, oranges, grapes, bananas, broccoli, donuts, candy, chocolate, bad bacteria, toothbrushes, and toothpaste and were instructed to attach them to one of the tooth-shaped plushies accordingly based on their relationship with the tooth. The instructors proceeded to inform the students about each factor as they attached it to the tooth, creating a fun process for the students to effectively absorb the information. Second booth's topic was tooth identification. The students were introduced to tooth anatomy and learned to notice the differences between incisive, canine, premolar and molar. A colored pencils and a picture of maxillary and mandibular dentition were distributed and the students were instructed to color which tooth matches with the details described by the instructor. At the third booth, the students watched a video about how to brush the teeth properly and the instructors did a live demonstration using toothbrushes, playing with dough wax as toothpaste and stuffed dolls modified with dental phantoms. The demonstration included the size of the toothbrush and the amount of toothpaste recommended for children, the proper method of toothbrushing and the recommended time to brush teeth. Fourth booth prepared a hand-made large-sized oral cavity model attached with play dough wax representing plaque and the students were given toothbrushes and directed to take off the play dough wax off the teeth. This activity subtly embedded the idea

of the importance of eliminating plaque by tooth brushing through cognitive skill stimulation. After completing the booths rotation, the instructors prepared a number of prizes and quizzes related to all the topics to evoke the enthusiasm of the students as well as a review to summarize all the activities.

The activity in general adopted two-way communication, interactive speaking was performed to stimulate the students attentiveness into the topics allowing students to engage with the speakers. The presentation materials and demonstrations were carried out in 3 languages, Indonesian, English, and Malay. To assess the students' knowledge level of oral and dental health, a 10-question pre-test questionnaire was filled out prior to starting and the same questionnaire as a post-test after completing all the agenda. Questions of the test were adapted to the materials and topics of the day. The results were collected as data to be evaluated further.

RESULTS

The distribution of personnel's education showed in Figure 1. The subjects in this activity were 31 Little Doctor students of the third grade, fourth grade, fifth grade, and sixth grade of Muhammadiyah 4 Elementary School, Surabaya (Figure 2). The students were accompanied by three teachers from the school to watch over them throughout the event.

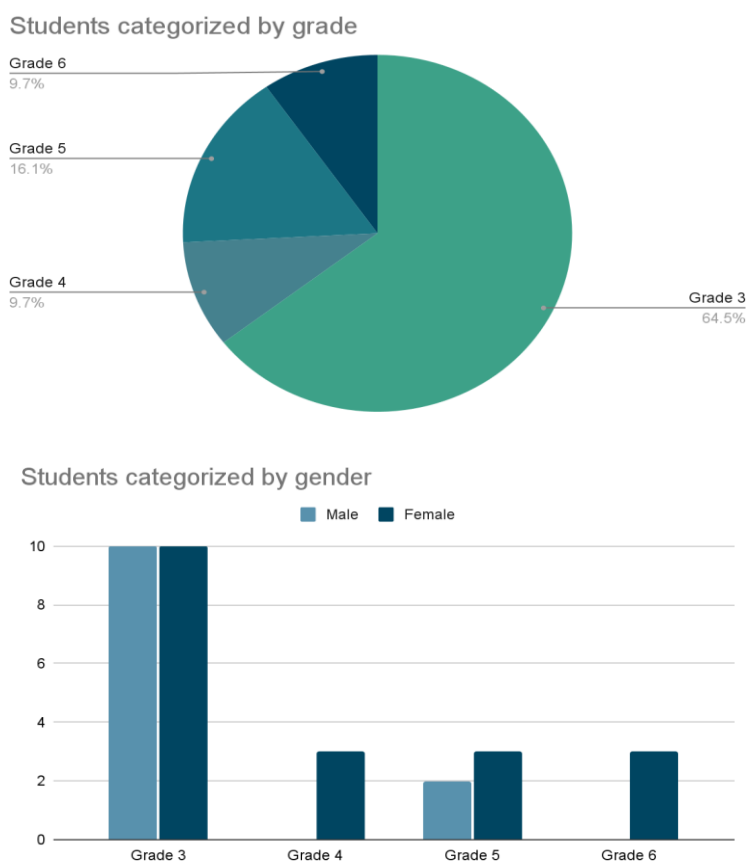


Figure 2. Distribution of the Students by grades and gender.

Their parents or guardians were allowed to enter and attend the activity as a passive audience and provided seats in the back row of the hall.

Pre-test and post-test questionnaire results were collected from 31 students chosen randomly from third grade, fourth grade, fifth grade, and sixth grade before and after the activity. One-sample and two-sample Kolmogorov-Smirnov Tests were performed for the equality of data distribution. Test results showed P-value < 0.05 (Sig. = 0.028) which rejects the null hypothesis that the variable follows a normal distribution. Test of homogeneity of variances using Levene The test results showed a P-value < 0.05 (Sig. = 0.00), which rejects the null hypothesis and hence concludes that there is a difference between the variances in the population.

A Mann-Whitney test showed that there were significant differences between pre-test and post-test results (P-value < 0.05), with the mean rank of the post-test group (45.56) being significantly higher than the pre-test group (17.44). It is appropriate to use the Wilcoxon signed rank test since the data is not normally distributed and the outcome data is rank. The pre-test and post-test data were calculated, and a significant difference between the two tests was observed (P-value < 0.05) (Sig. = 0.00). The Wilcoxon Signed Ranks test was also used to assess whether there is a significant difference between the pre-test and post-test for each grade involved independently. The test results of the third grade students showed a P-value < 0.05 (Sig. = 0.00). However, the P-values of the fourth, fifth, and sixth grade test results are 0.102, 0.066, and 0.102, respectively, so the mean ranks of both groups (pre-test and post-test) for all three grade groups do not differ significantly from one another.

DISCUSSION

In education, demonstration means to deliver information of any kind of knowledge that is prepared in detail to give an idea of a process, procedure, or mechanism directly to the audience and provide a chance for the audience to engage actively in the practice as participants. The method used is expected to increase the comprehension of the materials thoroughly; hence, it imprints a much better understanding of the information and is especially used in the growth stage of soft skills in children.^{9,10}

In this study, examination results showed a significant difference in the post-test result after the students completed the education session compared to the pre-test result. This apparent gap proved that the presentation and the interactive dental and oral health booth course have successfully instilled more information in the students, and the students have grasped more knowledge through their comprehensive skill with demonstration methods. A difference was found in all of the grades of the students involved in general, but independently, the difference was only statistically detected on the data for the third grade and showed otherwise on the rest of the grades. These results might happen due to the notable difference in the population of the participant subjects, as the third grade population was 20 students while

the fourth, fifth, and sixth grade populations were three, five, and three students, respectively.

Health communication is one form of communication. Health communication encompasses communication techniques for disseminating health information in order to encourage people and communities to make sound health management decisions. Health promotion is simply the dissemination of health information to individuals in order for them to get a better understanding of their health. The information is meant to impact one's behavior and cause changes in desired actions.¹¹

Dental and oral health education aims to expand knowledge, modify behavior, and improve human habits to preserve health. Some of the tactics and procedures used in health education have been shown to benefit human health. However, because health education is frequently unsustainable, an examination of the relationship between increased knowledge and behavior changes is impossible. As a result, we require a long-term empowerment strategy. Empowerment programs not only give content, but they also teach and mold behavior and habits, which may be done on a constant basis. Participants in the program are taught new skills and knowledge, such as how to recognize dental and oral health concerns.¹²

Video media with moving pictures is said to be more effective since it not only displays visuals but also includes narration that describes the state of the image. This can capture the audience's attention while also making it easier to recall previously gained information.¹³ Following the dental health empowerment workshop, the participants' awareness of oral health improved.¹⁴ Dental and oral health education is an essential part of health care and community empowerment. The community empowerment initiative was intended to teach student about dental and oral health and urge them to adopt better habits.¹⁵

CONCLUSION

The interactive education technique in elementary school was determined to be more effective and desirable because it meets the level of growth and development in school-aged children, particularly at Muhammadiyah 4 Elementary School. However, a larger sample size and population may be necessary to validate and corroborate the findings of this study.

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